IRON SILICATE is a manufactured/engineered mineral comparable to natural mineral aggregates from quarries. It is produced during copper refining and recycling processes. Metal content within iron silicate is reduced to the lowest levels that are economically viable and technically feasible. This co-product is not only unavoidable, but also needed; it constitutes an integral part of the copper production process by facilitating the reactions needed for the production of metals.

ROAD CONSTRUCTION, CEMENT and ABRASIVES are amongst the most widely used applications of iron silicate forms, often as a substitute for primary building materials. Other examples of uses are the following:

- **IRON SILICATE STONE** with edges up to 0.5m in length, comparable to igneous rock
- **HYDRAULIC ENGINEERING ROAD CONSTRUCTION**
- **CEMENT PRODUCTION**
- **CONCRETE PRODUCTION**
- **ABRASIVES**

**CASE STUDY:** Summary of Aurubis LCA Substitution Study

All use cases show a positive contribution to reduce emissions in the building and construction sector. There are positive results in all considered LCA impact categories in comparison to the substituted material for all substitution scenarios.

<table>
<thead>
<tr>
<th>Description</th>
<th>CO₂ Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate in road construction, by preventing the extraction of gravel in quarries</td>
<td>11,400 t CO₂</td>
</tr>
<tr>
<td>Reactive mineral additive in blended cements</td>
<td>170,000 t CO₂</td>
</tr>
<tr>
<td>Substitute for cement and crushed stone in concrete</td>
<td>116,000 t CO₂</td>
</tr>
</tbody>
</table>

The European Copper Institute is conducting research for 2021 (i.e. Life Cycle Assessment) on iron silicate from copper production to further explore the reduction potential of the industry’s environmental footprint.

**INDUSTRIAL SYMBIOSIS**

Using manufactured minerals in the construction sector facilitates industrial symbiosis towards greater circularity and climate neutrality.

**SAVING NATURAL RESOURCES**

Using iron silicate helps to conserve scarce natural minerals such as gravel, sand, and mineral flour.

**WASTE PREVENTION**

Iron silicate is an integral part of copper production; not using it would turn a sustainable product into waste for landfill.

**CLOSING THE LOOP**

Using this valuable manufactured mineral actively contributes to the circular economy and increases resource efficiency.

**IRON SILICATE**

The value of iron silicate goes far beyond this current environmental factor.